



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,952	03/26/2004	Michael David Pleskach	7162-0119	9829
39207	7590	12/29/2005	EXAMINER	
SACCO & ASSOCIATES, PA			MAI, ANH T	
P.O. BOX 30999			ART UNIT	
PALM BEACH GARDENS, FL 33420-0999			PAPER NUMBER	
			2832	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/810,952

Applicant(s)

PLESKACH ET AL.

Examiner

Anh T. Mai

Art Unit

2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

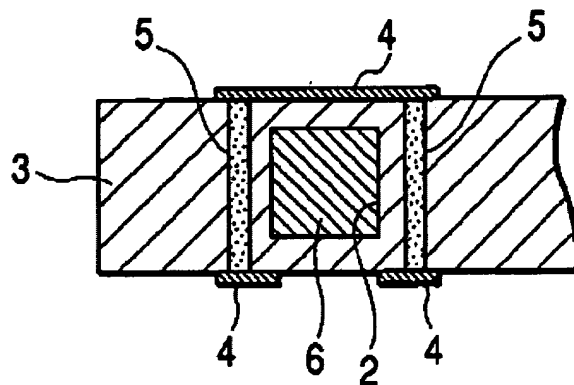
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 8, 10, 18-19, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyagi in view of Harding.

Aoyagi discloses a ceramic substrate 3; a ceramic core embedded within said ceramic substrate; at least one conductive coil 4,5 comprising a plurality of turns about ceramic core integrally formed with ceramic substrate in co-firing process [low temperature co-fired ceramic LTCC substrate is used, see paragraph 0014]. Figure 5 shows the ceramic core part embedded in ceramic substrate [the area surround by conductive coil 4,5 and perimeter 2, since applicant does not exclude any other material of the ceramic core, figure 5 reads on limitation of claim 1]. Also, the plurality of turns is contained within ceramic substrate at all points [figure 4].

Aoyagi discloses the invention as claimed except for the ceramic core having toroidal shape. Harding however, discloses the toroidal shape of the transformer core as shown in figures 2-4.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the transformer core as disclosed by Aoyagi, with toroidal shape as position, as disclosed by Harding for the purpose of obtaining a circular flux path [col 3, lines 63-64 and col 4, lines 15-19].

FIG. 5

With respect to claim 8, autotransformer is an intended use function of the claimed transformer.

With respect to claim 10, the claim is rejected for reciting method/step derived from the structure of claim 1 which is rejected above. The claim is method counterpart of structure claim 1 and methods steps therefore, inherent for manufacturing a transformer comprising co-fired ceramic LTCC substrate.

With respect to claims 18-19, 23 the claim is rejected for reciting method/step derived from the structure of claim 1 which is rejected above. The claim is method counterpart of structure claim 1 and methods steps, therefore, inherent for manufacturing a transformer comprising co-fired ceramic LTCC substrate having vias 5.

3. Claims 3, 9, 11, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyagi in view of Harding as applied in claim 1 above and further in view of Kitahara et al. [5029043].

Art Unit: 2832

Aoyagi in view of Harding discloses the invention as claimed as cited above except for ceramic toroid core having permeability greater than 1. Kitahara discloses the ceramic substrate, which has magnetic permeability of more than 1 [column 2; lines 17-21]. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have substrate having permeability of greater than 1 as taught by Kitahara to the core substrate of Aoyagi in view of Harding. The motivation would have been to provide adequate magnecity to form inductance in the body [col 2, lns 42-44]. Therefore, it would have been obvious to combine Kitahara with Aoyagi in view of Harding.

Claim 11 is rejected for reciting method/step derived from the structure of claim 3 which is rejected above. The claim is method counterpart of structure claim 3 and methods steps therefore inherent for manufacturing a transformer comprising co-fired ceramic LTCC substrate.

With respect to claim 20, the claim is rejected for reciting method/step derived from the structure of claim 9 which is rejected above. The claims are method counterpart of structure claim 9 and methods steps therefore; inherent for manufacturing a transformer comprising co-fired ceramic LTCC substrate which has permeability being greater than 1.

4. Claims 4, 5, 12-13, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyagi in view of Harding as applied in claim 1 above and further in view of Gomez et al. [6847282].

Aoyagi in view of Harding discloses the invention as claimed as cited above except for a metal ground plane disposed within the substrate.

Art Unit: 2832

Gomez however, discloses a metal ground plane 516 disposed within substrate layer 534 [figure 6B].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to a ground plane as taught by Gomez to the substrate of Aoyagi in view of Harding. The motivation would have been to provide grounding connection for the device. Therefore, it would have been obvious to combine Gomez with Aoyagi in view of Harding.

Conductive bottom shield pattern 516 is disposed on third surface 534. Surface 534 is adjacent to surface 532. Shield pattern 516 has a voltage potential, such as ground. Shield pattern 516 provides a shielding function that reduces unwanted electromagnetic interaction between inductor 500 and other electronic components (not shown).

With respect to claim 5, Gomez discloses a metal ground planes 104a, 104b disposed on outer surface of substrate layer 201 [figures 1B, 2; co 1, lines 46-48].

Printed ground planes 104a and 104b provide shielding to spiral patterns 102a and 102b, respectively. These ground planes are connected by apertures known as vias, such as via 106, that penetrate the substrate. As shown in FIGS. 1A and 1B, vias 108 and 110 connect spirals 102a and 102b.

With respect to claims 12-13, 21-22 the claims are rejected for reciting method/step derived from the structure of claims 5 which is rejected above. The claims are method counterpart of structure claim 5 and methods steps therefore; inherent for manufacturing a transformer comprising co-fired ceramic LTCC substrate with ground plane disposed within.

5. Claims 6-7, 14-16, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyagi in view of Harding as applied to claim 1 above, and further in view of Krone [6148500].

Art Unit: 2832

Aoyagi in view of Harding disclose the invention as claimed as cited above except for the second winding on the toroid core.

Krone however, discloses the windings 42, 50 having different radius [figure 25] on toroid core 30 to form a choke/transformer [col 5; lines 24-30]. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have second winding with different radius as taught by Krone to Aoyagi in view of Harding. The motivation would have been to provide part of the filter module. Therefore, it would have been obvious to combine Krone with Aoyagi in view Harding.

With respect to claim 23, Krone discloses second conductive traces 50 and vias 48 as shown in figure 15.

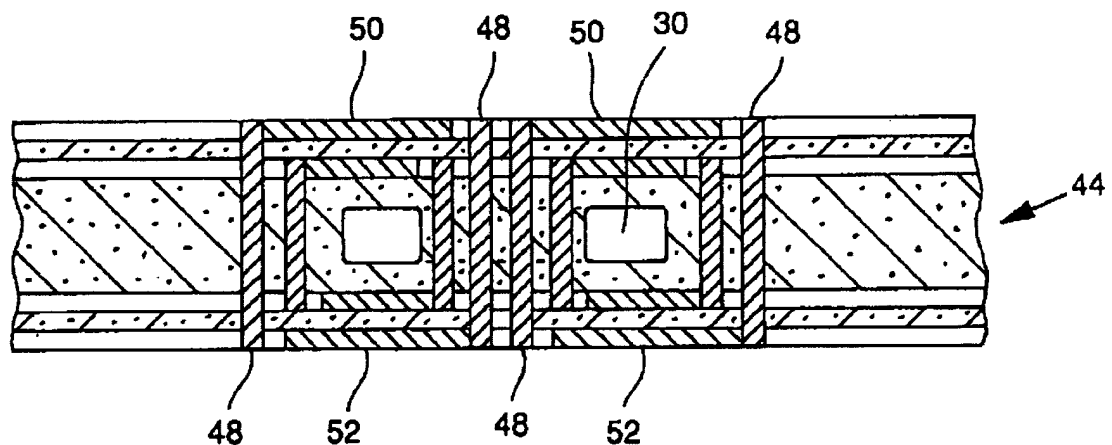


Fig. 15

With respect to claims 14-16, 24-25 the claims are rejected for reciting method/step derived from the structure of claims 6-7 which are rejected above. The claims are method counterpart of structure claims 6-7 and methods steps, therefore inherent for manufacturing a

Art Unit: 2832

transformer comprising co-fired ceramic LTCC substrate, with second conductive coil being different from a coil radius of first conductive coil.

6. Claims 17, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyagi in view of Harding as applied in claim 10 above and further in view of Blumkin et al. [4626816].

Aoyagi in view of Harding discloses the invention as claimed except for a tap along a length of conductive coil to form an autotransformer. Blumkin however, discloses external tabs 51', 52', 53' to tap into coil assembly at any desired point to provide a tapped coil/auto-transformer.

It will be understood that at various steps or stages of the process the assembly can be fired by conventional means to set the insulative layers and pads and/or conductive pads, jumpers and coils. The resulting assemblies 50 and 100 of FIGS. 7 and 18 are compact chips especially adapted to connection with one or more miniature circuits. The external tabs, 51', 52', 53' and 82 make it possible to tap into the coil assembly at any

desired point, so that the assembly may be used as a tapped coil or auto-transformer.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the transformer as disclosed by Aoyagi in view of Harding, with tap along the length of conductive coil, as disclosed by Blumkin for the purpose of obtaining an auto-transformer [col 4, line 67 to col 5, line 2].

The claims are rejected for reciting method/step derived from the structural limitation that is rejected above.

Art Unit: 2832

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 form.

Response to Arguments

8. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh T. Mai whose telephone number is 571-272-1995. The examiner can normally be reached on 5/4/9 Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on 571-272-1990. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

122405
am



**ANH MAI
PRIMARY EXAMINER**